Supporting Document No. 20

ERRATA SHEET NO. 1 - ITEM 5
MAY 11, 2005

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION

TENTATIVE ORDER NO. R9-2005-0005 AND R9-2005-0006
NPDES PERMIT NOS. CA0108073 AND CA0108181

WASTE DISCHARGE REQUIREMENTS FOR
SOUTHERN CALIFORNIA EDISON
SAN ONOFRE NUCLEAR GENERATING STATION, UNITS 2 AND 3

The following modifications to tentative Order Nos. R9-2005-0005 and R9-2005-0006, Monitoring and Reporting Program, and Fact Sheet reflect revisions to address comments submitted to the Regional Board by interested persons. The changes also reflect corrections and edits made by Regional Board staff based on further review and analysis of the tentative documents. The deleted text is shown as *strikethrough*; added text is shown as *underlined*.

1. TENTATIVE ORDER NO. R9-2005-0005 (UNIT 2)

a. *page ii, Facility and Order Information, of tentative Order*

Internal Outfall	Description
	Cooling Water and Other Wastestreams Routed from Unit 1 to the 002 Outfall
001	Cooling Water Flows
001-A	Unit 1 Sewage Treatment Plant
001-B	Mesa Complex Sewage Treatment Plant
001-C	Metal Cleaning Wastes
001-D	Radwaste System
~~001-E~~	~~Plant Drains~~
~~001-F~~ 001-E	Yard Drains
~~001-G~~ 001-F	Dewatering
	In-Plant Wastestreams Routed from Unit 2 to the 002 Outfall
002-A	Chemical Metal Cleaning Wastes (Steam Generator)
002-B	Non-Chemical Metal Cleaning Wastes (Steam Generator and Feedwater Piping Sludge Lancing)
002-C	Blowdown Processing
002-D	Makeup Demineralizer
002-E	Radwaste System
002-F	Polishing Demineralizer System
002-G	Steam Generator Blowdown
002-H	Hotwell Overboard
002-I	Plant Drains
002-J	Intake Structure Sump
~~002-K~~	~~Thermophilic Digester~~
~~002-L~~ 002-K	Concrete Cutting Water

b. *Table of Contents of tentative Order No. R9-2005-0005*

Add Attachment H to the bottom of the Table of Contents of tentative Order:

Attachment H 1: Schematic of SONGS Diffuser System and Intake Velocity Cap
2: Graphical Representation Showing Effectiveness of Unit 2 and 3 Thermal Diffusers in Complying with Receiving Water Temperature Objectives of the Thermal Plan (at Delta T values of 20 and 25 degrees F)

c. *page 7, Section III.B.1.b (Final Effluent Limitations – Total Residual Chlorine) of tentative Order*

b. Total Residual Chlorine[7/]

6-Month Median	Daily Max.	Instantaneous Max.
~~24~~ 22 µg/L	88 µg/L	~~176 µg/L~~ See Endnote 7

d. *page 8, Section III.C (1ST paragraph) of tentative Order*

C. Final Effluent Limitations – Combined Low Volume, In-Plant Wastewaters[11/] from Unit 2 (Internal Outfalls 002-C through ~~002-L~~ 002-K) and Unit 1 (Internal Outfalls 001-D through ~~001-G~~ 001-E)

All low volume, in-plant wastewaters from Unit 2 (i.e. Internal Outfalls 002-C through ~~002-L~~ 002-K) shall be composited on a flow-weighted basis. All low-volume, in-plant wastewaters from Unit 1 (Internal Outfalls 001-D through ~~001-G~~ 001-E) shall be included in the composite sample whenever the discharger routes the Unit 1 flows to Outfall 002. The composite sample shall not exceed the following limitations:

e. *page 11, Section III.D (1st paragraph) of tentative Order*

D. Final Effluent Limitations – Once Through Cooling Discharges[14/] Through Outfall 002

The discharge of once through cooling water from Unit 2 to Outfall 002 shall not exceed the following limitations:

1. Total residual chlorine and/or bromine may not be discharged from SONGS Unit 2 for more than two hours per day unless the Discharger demonstrates to the Regional Board that discharge for more than two hours is required for macroinvertebrate control. ~~The duration of each chlorination cycle shall not exceed 25 minutes~~.

f. *page 13, Section III.F (1st paragraph) of tentative Order*

F. Final Effluent Limitations – Individual, Low Volume, In-Plant, Wastewaters[11/] from Unit 2 (Internal Outfalls 002-C through ~~002-L~~ 002-K) and Unit 1 (Internal Outfalls 001-D through ~~001-G~~ 001-E)

The following effluent limitations (concentration-based and mass-based) shall be applicable to discharges of all individual, low-volume, in-plant wastewaters from Unit 2 (Internal Outfalls 002-C through ~~002-L~~ 002-K). The effluent limitations in this Section shall also be applicable to discharges of individual, low-volume, in-plant wastewaters from Unit 1 (Internal Outfalls 001-D through ~~001-G~~ 001-F) whenever these discharges are routed from Unit 1 to Outfall 002:

g. *page 14 (TSS and Oil and Grease Limitations Table), Section III.F of tentative Order*

Outfall Number	Low Volume Wastewater Source	Max Flow (mgd)	Units	TSS		Oil/Grease	
				30-Day Avg.	Daily Max	30-Day Avg.	Daily Max
002-C	Blowdown Processing	0.085	lbs/day	21.	71.	11.	14.
002-D	Makeup Demineralizer	0.670	lbs/day	170.	560.	84.	110.
002-E	Radwaste System	0.432	lbs/day	110.	360.	54.	72.
002-F	Polishing Demineralizer System	1.4	lbs/day	350.	1,200.	180.	230.
002-G	Steam Generator Blowdown	0.720	lbs/day	180.	600.	90.	120.
002-H	Hotwell Overboard	7.20	lbs/day	1,800.	6,000.	900.	1,200.
002-I	Plant Drains	0.8	lbs/day	200.	670.	100.	130.
002-J	Intake Structure Sump	0.288	lbs/day	72.	240.	36.	48.
~~002-K~~	~~Thermophilic Digester~~	~~0.010~~	~~lbs/day~~	~~2.5~~	~~8.3~~	~~1.0~~	~~1.7~~
002-~~L~~K	Concrete Cutting Water	0.2	lbs/day	50.	170.	25.	33.
001-D*	Radwaste	0.144	lbs/day	36.	120.	18.	24.
~~001-E*~~	~~Plant Drains~~	~~0.014~~	~~lbs/day~~	~~4.~~	~~12.~~	~~2.~~	~~2.~~
001-~~F~~E*	Yard Drains	0.360	lbs/day	90.	300.	45.	60.
001-~~G~~E*	Dewatering	0.864	lbs/day	220.	720.	110.	140.

* Effluent limitations for Outfalls 001-D through ~~001-G~~ 001-F are applicable only when individual low-volume, in-plant

wastewater discharges from Unit 1 are routed to Outfall 002.

h. *page 24, Section VI, Endnote 7 of tentative Order*

7. The limitations for total residual chlorine for the "Combined Discharges through Outfall 002" are water quality based effluent limitations derived from the following Ocean Plan (Table B) water quality objectives for total residual chlorine:

Total Residual Chlorine – Water Quality Objectives (µg/L)		
6-Month Median	**Daily Max.**	~~**Instantaneous Max.**~~
2	8	~~60~~

6-month median and daily maximum effluent limitations were calculated in accordance with procedures established in Section III.C.3.a of the Ocean Plan (and described in Endnote Reference 5, above). The instantaneous maximum limitation ~~was~~ shall be calculated for intermittent discharges of chlorine in accordance with Table B, *note c.*, of the 2001 Ocean Plan. ~~SONGS Units 1 and 2 discharge chlorine intermittently, four times per day for 25-minute durations~~. The appropriate instantaneous maximum water quality objective for intermittent discharges is a variable value that is a function of the duration in minutes of uninterrupted chlorine discharge and shall be determined using the following equation:

$$\log y = - 0.43 (\log x) + 1.8$$

where:
y = the water quality objective, in µg/L, to apply when chlorine is being discharged
x = the duration of uninterrupted chlorine discharge in minutes

~~For SONGS Unit 2, which discharges for 25 minute uninterrupted intervals, the appropriate water quality objective for intermittent discharges is 16 µg/L. Then, using the equation from Section III.C.3.a of the Ocean Plan, the instantaneous maximum effluent limitation is determined to be 176 µg/L.~~

The instantaneous maximum effluent limitation for total residual chlorine for intermittent dischargers shall then be calculated based on the water quality objective (calculated from the above equation from Table B, *note c.*, of the 2001 Ocean Plan) in conjunction with a Dm value of 10 and procedures established in Section III.C.3.a of the Ocean Plan.

For example, an uninterrupted chlorine discharge of 25 minutes will render a water quality objective of 16 ug/l and an effluent limitation of 176 ug/l for total residual chlorine. Conversely, an uninterrupted chlorine discharge of 40 minutes will render a water quality objective of 13 ug/l and an effluent limitation of 143 ug/l for total residual chlorine.

i. *page 25, Section VI, Endnote 11 of tentative Order*

11. "Low volume wastewaters", as defined in the Effluent Limitations Guidelines for the Steam Electric Power Generating Point Source Category at 40 CFR 423.11, means, taken collectively as if from one source, wastewater from all sources except those for which specific limitations are otherwise established in the Effluent Limitations Guidelines.

The individual, low volume wastewaters identified by this Order for Unit 2 are:

- Blowdown Processing
- Makeup Demineralizer
- Radwaste System
- Polishing Demineralizer System
- Steam Generator Blowdown
- Hotwell Overboard
- Plant Drains
- Intake Structure Sump
- ~~Thermophilic Digester~~
- Concrete Cutting Water

The individual, low volume wastewaters that may be routed from Unit 1 to Outfall 002 are:

- ~~Plant Drains~~
- Yard Drains
- Radwaste System
- Dewatering

2. TENTATIVE ORDER NO. R9-2005-0006 (UNIT 3)

a. *page ii, Facility and Order Information, of tentative Order*

Internal Outfall	Description
	Cooling Water and Other Wastestreams Routed from Unit 1 to the 003 Outfall
001	Cooling Water Flows
001-A	Unit 1 Sewage Treatment Plant
001-B	Mesa Complex Sewage Treatment Plant
001-C	Metal Cleaning Wastes
001-D	Radwaste System
~~001-E~~	~~Plant Drains~~
~~001-F~~ 001-E	Yard Drains
~~001-G~~ 001-F	Dewatering
	In-Plant Wastestreams Routed from Unit 3 to the 003 Outfall
003-A	Chemical Metal Cleaning Wastes (Steam Generator)
003-B	Non-Chemical Metal Cleaning Wastes (Steam Generator and Feedwater Piping Sludge Lancing)
003-C	Blowdown Processing
003-D	Makeup Demineralizer
003-E	Radwaste System
003-F	Polishing Demineralizer System
003-G	Steam Generator Blowdown
003-H	Hotwell Overboard
003-I	Plant Drains
003-J	Intake Structure Sump
~~003-K~~	~~Thermophilic Digester~~
~~003-L~~ 003-K	Concrete Cutting Water

b. *Table of Contents of tentative Order No. R9-2005-0006*

Add Attachment H to the bottom of the Table of Contents of tentative Order:

Attachment H 1: Schematic of SONGS Diffuser System and Intake Velocity Cap
2: Graphical Representation Showing Effectiveness of Unit 2 and 3 Thermal Diffusers in Complying with Receiving Water Temperature Objectives of the Thermal Plan (at Delta T values of 20 and 25 degrees F)

c. *page 7, Section III.B.1.b (Final Effluent Limitations – Total Residual Chlorine) of tentative Order*

b. Total Residual Chlorine[7/]

6-Month Median	Daily Max.	Instantaneous Max.
~~24~~ 22 µg/L	88 µg/L	~~176 µg/L~~ See Endnote 7

d. *page 8, Section III.C (1ST paragraph) of tentative Order*

C. Final Effluent Limitations – Combined Low Volume, In-Plant Wastewaters[11/] from Unit 3 (Internal Outfalls 003-C through ~~003-L~~ 003-K) and Unit 1 (Internal Outfalls 001-D through ~~001-G~~ 001-E)

All low volume, in-plant wastewaters from Unit 3 (i.e. Internal Outfalls 003-C through ~~003-L~~ 003-K) shall be composited on a flow-weighted basis. All low-volume, in-plant wastewaters from Unit 1 (Internal Outfalls 001-D through ~~001-G~~ 001-E) shall be included in the composite sample whenever the discharger routes the Unit 1 flows to Outfall 003. The composite sample shall not exceed the following limitations:

e. *page 11, Section III.D (1st paragraph) of tentative Order*

D. Final Effluent Limitations – Once Through Cooling Discharges[14/] Through Outfall 003

The discharge of once through cooling water from Unit 3 to Outfall 003 shall not exceed the following limitations:

2. Total residual chlorine and/or bromine may not be discharged from SONGS Unit 3 for more than two hours per day unless the Discharger demonstrates to the Regional Board that discharge for more than two hours is required for macroinvertebrate control. ~~The duration of each chlorination cycle shall not exceed 25 minutes~~.

f. *page 13, Section III.F (1st paragraph) of tentative Order*

F. Final Effluent Limitations – Individual, Low Volume, In-Plant, Wastewaters[11/] from Unit 3 (Internal Outfalls 003-C through ~~003-L~~ 003-K) and Unit 1 (Internal Outfalls 001-D through ~~001-G~~ 001-E)

The following effluent limitations (concentration-based and mass-based) shall be applicable to discharges of all individual, low-volume, in-plant wastewaters from Unit 3 (Internal Outfalls 003-C through ~~003-L~~ 003-K). The effluent limitations in this Section shall also be applicable to discharges of individual, low-volume, in-plant wastewaters from Unit 1 (Internal Outfalls 001-D through ~~001-G~~ 001-E) whenever these discharges are routed from Unit 1 to Outfall 003:

g. *page 14 (TSS and Oil and Grease Limitations Table), Section III.F of tentative Order*

Outfall Number	Low Volume Wastewater Source	Max Flow (mgd)	Units	TSS		Oil/Grease	
				30-Day Avg.	Daily Max	30-Day Avg.	Daily Max
003-C	Blowdown Processing	0.085	lbs/day	21.	71.	11.	14.
003-D	Makeup Demineralizer	0.670	lbs/day	170.	560.	84.	110.
003-E	Radwaste System	0.432	lbs/day	110.	360.	54.	72.
003-F	Polishing Demineralizer System	1.4	lbs/day	350.	1,200.	180.	230.
003-G	Steam Generator Blowdown	0.720	lbs/day	180.	600.	90.	120.
003-H	Hotwell Overboard	7.20	lbs/day	1,800.	6,000.	900.	1,200.
003-I	Plant Drains	0.8	lbs/day	200.	670.	100.	130.
003-J	Intake Structure Sump	0.288	lbs/day	72.	240.	36.	48.
~~003-K~~	~~Thermophilic Digester~~	~~0.010~~	~~lbs/day~~	~~2.5~~	~~8.3~~	~~1.0~~	~~1.7~~
003-~~L~~K	Concrete Cutting Water	0.2	lbs/day	50.	170.	25.	33.
001-D*	Radwaste	0.144	lbs/day	36.	120.	18.	24.
~~001-E*~~	~~Plant Drains~~	~~0.014~~	~~lbs/day~~	~~4.~~	~~12.~~	~~2.~~	~~2.~~
001-~~F~~E*	Yard Drains	0.360	lbs/day	90.	300.	45.	60.
001-~~G~~E*	Dewatering	0.864	lbs/day	220.	720.	110.	140.

* Effluent limitations for Outfalls 001-D through ~~001-G~~ 001-F are applicable only when individual low-volume, in-plant wastewater discharges from Unit 1 are routed to Outfall 003.

h. *page 24, Section VI, Endnote 7 of tentative Order*

7. The limitations for total residual chlorine for the "Combined Discharges through Outfall 003" are water quality based effluent limitations derived from the following Ocean Plan (Table B) water quality objectives for total residual chlorine:

Total Residual Chlorine – Water Quality Objectives (µg/L)		
6-Month Median	**Daily Max.**	**~~Instantaneous Max.~~**
2	8	~~60~~

6-month median and daily maximum effluent limitations were calculated in

accordance with procedures established in Section III.C.3.a of the Ocean Plan (and described in Endnote Reference 5, above). The instantaneous maximum limitation ~~was~~ shall be calculated for intermittent discharges of chlorine in accordance with Table B, *note c.*, of the 2001 Ocean Plan. ~~SONGS Units 1 and 3 discharge chlorine intermittently, four times per day for 25-minute durations~~. The appropriate instantaneous maximum water quality objective for intermittent discharges is a variable value that is a function of the duration in minutes of uninterrupted chlorine discharge and shall be determined using the following equation:

$$\log y = - 0.43 (\log x) + 1.8$$

where:
y = the water quality objective, in µg/L, to apply when chlorine is being discharged
x = the duration of uninterrupted chlorine discharge in minutes

~~For SONGS Unit 3, which discharges for 25 minute uninterrupted intervals, the appropriate water quality objective for intermittent discharges is 16 µg/L. Then, using the equation from Section III.C.3.a of the Ocean Plan, the instantaneous maximum effluent limitation is determined to be 176 µg/L.~~

The instantaneous maximum effluent limitation for total residual chlorine for intermittent dischargers shall then be calculated based on the water quality objective (calculated from the above equation from Table B, *note c.*, of the 2001 Ocean Plan) in conjunction with a Dm value of 10 and procedures established in Section III.C.3.a of the Ocean Plan.

For example, an uninterrupted chlorine discharge of 25 minutes will render a water quality objective of 16 ug/l and an effluent limitation of 176 ug/l for total residual chlorine. Conversely, an uninterrupted chlorine discharge of 40 minutes will render a water quality objective of 13 ug/l and an effluent limitation of 143 ug/l for total residual chlorine.

i. *page 25, Section VI, Endnote 11 of tentative Order*

11. "Low volume wastewaters", as defined in the Effluent Limitations Guidelines for the Steam Electric Power Generating Point Source Category at 40 CFR 423.11, means, taken collectively as if from one source, wastewater from all sources except those for which specific limitations are otherwise established in the Effluent Limitations Guidelines.

The individual, low volume wastewaters identified by this Order for Unit 3 are:

- Blowdown Processing
- Makeup Demineralizer
- Radwaste System
- Polishing Demineralizer System
- Steam Generator Blowdown
- Hotwell Overboard
- Plant Drains
- Intake Structure Sump
- ~~Thermophilic Digester~~
- Concrete Cutting Water

The individual, low volume wastewaters that may be routed from Unit 1 to Oufall 003 are:

- ~~Plant Drains~~
- Yard Drains
- Radwaste System
- Dewatering

3. ATTACHMENT A - SONGS LOCATIONS MAP AND FACILITY DIAGRAM (Applicable to both tentative Order Nos. R9-2005-0005 and R9-2005-0006)

Add New Schematic to Attachment A (SONGS Location Map and Facility Diagram) of tentative Order, showing location of SONGS Units 2 and 3 Intake Structures, Discharge Outfalls, Fish Return System Outfall, Across-the-Beach Discharge, and Receiving Water Monitoring Stations)

(Note: Due to its very large size, the hard copy of the new schematic to Attachment A is not attached with this *Errata Sheet*. The hard copy of the new schematic, however, has been entered into the record and available for review at the Regional Board office. An electronic copy of the schematic will be posted on the Regional Board's website, as part of the agenda material for Item 5, for the May 11, 2005 Regional Board meeting. If needed, a hard copy of the new schematic will be available for the review of Board members and the public at the May 11, 2005 meeting.)

4. ATTACHMENT D - MONITORING AND REPORTING PROGRAM (MRP) FOR TENTATIVE ORDER NO. R9-2005-0005 (UNIT 2)

a. *page D-4, Section II (Monitoring Locations Table) of MRP*

Water/Wastewater to be Monitored from SONGS Unit 2	***Outfalls***	***Monitoring Location on SONGS Facility Gridmap***
Receiving Water	-	All receiving water samples shall be collected at monitoring stations as described by Attachment 1 of this MRP.
Cooling Water Intake	-	K-69
Combined Discharge	002	K-69
Chemical and Non-Chemical Metal Cleaning Wastes	002-A and 002-B	I-65
Blowdown Processing	002-C	I-68
Makeup Demineralizer	002-D	D-81
Radwaste System	002-E	F-69, 70
Polishing Demineralizer System	002-F	I-65
Steam Generator Blowdown	002-G	G-69
Hotwell Overboard	002-H	I-67
Plant Drains (Building Sump)	002-I	H-63
Intake Structure Sump	002-J	I-69
~~Thermophilic Digester~~	~~002-K~~	~~N/A~~
Concrete Cutting Water	002-~~I~~K	N/A
Across-the-Beach Discharges	005	N/A
Water/Wastewater to be Monitored from SONGS Unit 1	*Outfalls*	***Monitoring Location on SONGS Facility Gridmap***
Unit 1 Sewage Effluent	001-A	I-62
Mesa Complex Sewage Effluent	001-B	Q-19
Metal Cleaning Waste (Chemical and Non-chemical)	001-C	Q-19
Radwaste System	001-D	N/A
~~Plant Drains~~	~~001-E~~	~~N/A~~
Yard Drains	001-~~F~~E	N/A
Dewatering	001-~~G~~F	N/A

b. *page D-7, Section V (1st paragraph) of MRP*

V. COMBINED LOW VOLUME, IN-PLANT WASTEWATERS FROM UNIT 2[9/,10/] (INTERNAL OUTFALLS 002-C THROUGH ~~002-L~~ 002-K) AND UNIT 1[9/,10/] (INTERNAL OUTFALLS 001-D THROUGH ~~001-G~~ 001-E)

Low volume, in-plant wastewaters from Unit 2 (Internal Outfalls 002-C through 002-~~L~~K) shall be monitored in accordance with the schedule below. Reported values shall result from individual grab samples of in-plant waste streams that are collected and composited on a flow-weighted basis. Measurements or estimates of flows of individual in-plant waste streams used as a basis for compositing shall be reported as well as the names of all waste streams sampled. The final sample shall include as many wastewaters as possible. The highest priority waste streams are radwaste, full flow condensate polishing demineralizer regenerants, and makeup demineralizer regenerants. The flow rate used to determine the proportion of each waste stream in the composited sample shall be the actual (preferred) or estimated flow rate for the day on which samples are collected. Low-volume, in-plant wastewaters from Unit 1 (Internal Outfalls 001-D through 001-~~G~~E) shall be included in the composite sample whenever the discharger routes the Unit 1 flows to Outfall 002. The composite sample representing combined low volume, in-plant wastewaters from Unit 2 and Unit 1 shall be analyzed for the following constituents and shall comply with the following analysis and reporting frequency:

c. *page D-9, Section VI (1st paragraph) of MRP*

VI. COMBINED LOW VOLUME, IN-PLANT WASTEWATERS FROM UNIT 2[9/,10/] (INTERNAL OUTFALLS 002-C THROUGH ~~002-L~~ 002-K) AND UNIT 1[9/,10/] (INTERNAL OUTFALLS 001-D THROUGH ~~001-G~~ 001-E)

Each individual, low-volume, in-plant wastestream from Unit 2 (Internal Outfalls 002-C through 002-~~L~~K) shall be collected and analyzed separately in accordance with the following schedule (the following monitoring schedule shall also be applicable to discharges of individual, low-volume, in-plant wastewaters from Unit 1 (Internal Outfalls 001-D through 001-~~G~~E) whenever these discharges are routed from Unit 1 to Outfall 002):

d. *page D-17, Section XIV, Endnote 9 of MRP*

9. For the purposes of monitoring, the following wastewaters are considered low volume wastewaters from Unit 2:

- Blowdown Processing
- Makeup Demineralizer
- Radwaste System
- Polishing Demineralizer System
- Steam Generator Blowdown
- Hotwell Overboard
- Plant Drains
- Intake Structure Sump
- ~~Thermophilic Digester~~
- Concrete Cutting Water

For the purposes of monitoring, the following wastewaters are considered low volume wastewaters from Unit 1:

- ~~Plant Drains~~
- Yard Drains
- Radwaste System
- Dewatering

e. *page D-17, Section XIV, Endnote 10 (1st paragraph) of MRP*

10. A composite sample shall be created from as many individual low volume wastewaters as possible. Individual low volume wastewaters that account for no flow on the day of sample collection would, however, not be included in a composite sample. The following example shows how to create a flow-weighted composite sample.

5. ATTACHMENT D - MONITORING AND REPORTING PROGRAM (MRP) FOR TENTATIVE ORDER NO. R9-2005-0006 (UNIT 3)

a. *page D-4 (Monitoring Locations Table), Section II of MRP*

Water/Wastewater to be Monitored from SONGS Unit 3	***Outfalls***	***Monitoring Location on SONGS Facility Gridmap***
Receiving Water	-	All receiving water samples shall be collected at monitoring stations as described by Attachment 1 of this MRP.
Cooling Water Intake	-	K-70
Combined Discharge	003	K-70
Chemical and Non-Chemical Metal Cleaning Wastes	003-A and 003-B	I-74
Blowdown Processing	003-C	I-71
Makeup Demineralizer	003-D	D-81
Radwaste System	003-E	F-69, 70
Polishing Demineralizer System	003-F	I-74
Steam Generator Blowdown	003-G	G-69
Hotwell Overboard	003-H	I-72
Plant Drains (Building Sump)	003-I	J-70
Intake Structure Sump	003-J	I-71
~~Thermophilic Digester~~	~~003-K~~	~~N/A~~
Concrete Cutting Water	003-~~L~~K	N/A
Across-the-Beach Discharges	005	N/A
Water/Wastewater to be Monitored from SONGS Unit 1	*Outfalls*	***Monitoring Location on SONGS Facility Gridmap***
Unit 1 Sewage Effluent	001-A	I-62
Mesa Complex Sewage Effluent	001-B	Q-19
Metal Cleaning Waste (Chemical and Non-chemical)	001-C	Q-19
Radwaste System	001-D	N/A
~~Plant Drains~~	~~001-E~~	~~N/A~~
Yard Drains	001-~~F~~E	N/A
Dewatering	001-~~G~~F	N/A

b. *page D-7, Section V (1st paragraph) of MRP*

V. COMBINED LOW VOLUME, IN-PLANT WASTEWATERS FROM UNIT 3[9/,10/] (INTERNAL OUTFALLS 003-C THROUGH ~~003-L~~ 003-K) AND UNIT 1[9/,10/] (INTERNAL OUTFALLS 001-D THROUGH ~~001-G~~ 001-E)

Low volume, in-plant wastewaters from Unit 3 (Internal Outfalls 003-C through 003-~~L~~K) shall be monitored in accordance with the schedule below. Reported values shall result from individual grab samples of in-plant waste streams that are collected and composited on a flow-weighted basis. Measurements or estimates of flows of individual in-plant waste streams used as a basis for compositing shall be reported as well as the names of all waste streams sampled. The final sample shall include as many wastewaters as possible. The highest priority waste streams are radwaste, full flow condensate polishing demineralizer regenerants, and makeup demineralizer regenerants. The flow rate used to determine the proportion of each waste stream in the composited sample shall be the actual (preferred) or estimated flow rate for the day on which samples are collected. Low-volume, in-plant wastewaters from Unit 1 (Internal Outfalls 001-D through 001-~~G~~E) shall be included in the composite sample whenever the discharger routes the Unit 1 flows to Outfall 003. The composite sample representing combined low volume, in-plant wastewaters from Unit 3 and Unit 1 shall be analyzed for the following constituents and shall comply with the following analysis and reporting frequency:

c. *page D-9, Section VI (1st paragraph) of MRP*

VI. COMBINED LOW VOLUME, IN-PLANT WASTEWATERS FROM UNIT 3[9/,10/] (INTERNAL OUTFALLS 003-C THROUGH ~~003-L~~ 003-K) AND UNIT 1[9/,10/] (INTERNAL OUTFALLS 001-D THROUGH ~~001-G~~ 001-E)

Each individual, low-volume, in-plant wastestream from Unit 3 (Internal Outfalls 003-C through 003-~~L~~K) shall be collected and analyzed separately in accordance with the following schedule (the following monitoring schedule shall also be applicable to discharges of individual, low-volume, in-plant wastewaters from Unit 1 (Internal Outfalls 001-D through 001-~~G~~E) whenever these discharges are routed from Unit 1 to Outfall 003):

d. *page D-17, Section XIV, Endnote 9 of MRP*

9. For the purposes of monitoring, the following wastewaters are considered low volume wastewaters from Unit 3:

- Blowdown Processing
- Makeup Demineralizer
- Radwaste System
- Polishing Demineralizer System
- Steam Generator Blowdown
- Hotwell Overboard
- Plant Drains
- Intake Structure Sump
- ~~Thermophilic Digester~~
- Concrete Cutting Water

For the purposes of monitoring, the following wastewaters are considered low volume wastewaters from Unit 1:

- ~~Plant Drains~~
- Yard Drains
- Radwaste System
- Dewatering

e. *page D-17, Section XIV, Endnote 10 (1st paragraph) of MRP*

10. A composite sample shall be created from as many individual low volume wastewaters as possible. Individual low volume wastewaters that account for no flow on the day of sample collection would, however, not be included in a composite sample. The following example shows how to create a flow-weighted composite sample.

6. ATTACHMENT 1 TO MONITORING AND REPORTING PROGRAM (Applicable to both tentative Order Nos. R9-2005-0005 and R9-2005-0006)

***Generate Errata* to:**

SONGS RECEIVING WATER MONITORING STATIONS

Figure 1: Continuous Temperature Monitoring Stations

Figure 2: Otter Trawl Stations for Fish Population Surveys

Figure 4: Temperature Profile and Water Quality Measurement Stations

7. ATTACHMENT 3 TO MONITORING AND REPORTING PROGRAM (Applicable to both tentative Order Nos. R9-2005-0005 and R9-2005-0006)

Section 1, Chronic Toxicity Monitoring, (2nd paragraph) of Attachment 3 to MRP

Combined discharge samples shall be taken during a period when low volume wastes are being discharged. Samples shall be taken at the NPDES sampling location of the combined discharge. ~~At the time of the first toxicity test immediately following adoption of this permit, the permittee shall conduct toxicity tests~~ During the 4th quarter of 2006, the permittee shall perform a chronic toxicity screening test with an invertebrate, Haliotis rufescens, a plant Macrocystis pyrifera, and a vertebrate Atherinops Affinis. After this screening period, monitoring will be conducted on the most sensitive species. Every two years the permittee shall re-screen to determine the most sensitive species. This screening shall be performed on a different month than previous species screenings. The most sensitive species shall then be used.

8. ATTACHMENT E - FACT SHEET TO TENTATIVE ORDER NOS. R9-2005-0005 AND R9-2005-0006

a. *page E-1, Introduction Section (3rd paragraph), of Fact Sheet*

Unit 2 has an electrical output of 1087 MW and began operation in 1983. Unit 3 is virtually identical to Unit 2; it too has an electrical output of 1087 MW and began operation on April 1, 1984. However, the two Units do have separate discharge conduits. A series of large pumps pass 1,219 MGD seawater through the condenser of each plant. Upon passage through the condenser, the temperature of seawater increases approximately 20ºF. During this circuit, a number of in-plant waste streams are co-mingled with the cooling water flow. These include wastewaters from the following operations/processes:

- Blowdown Processing
- Makeup Demineralizer
- Radwaste System
- Polishing Demineralizer System
- Steam Generator Blowdown
- Hotwell Overboard
- Plant Drains
- Intake Structure Sump
- ~~Thermophilic Digester~~
- Concrete Cutting Water

However, many of the low volume waste discharges are periodic and only occur during unusual conditions such as maintenance outages. SCE has indicated that it is no longer contemplating construction of a thermophilic digester which was originally proposed during the 1990s. Waste discharge and monitoring requirements (previously included in Order Nos. 99-47 and 99-49) regarding a thermophilic digestor have not been included in tentative Order Nos. R9-2005-0005 and R9-2005-0006.

b. *page E-4 (2nd paragraph), Section I.A (Facility Description - Cooling Water Intake Structures) of Fact Sheet*

The submerged structures for both Units 2 and 3 are fitted with velocity caps to reduce entrainment of motile fishes through the conduit to the on-shore screen wells (a schematic showing intake velocity cap design can be found in Attachment H-1 to the tentative Orders). At the intake structures located near shore, vertical traveling screen assemblies are angled approximately 30º to the incoming flow. These screen assemblies, together with a series of vertical louvers in the screen forebay, serve to direct entrapped motile organisms to a quiescent zone located at the far end of the forebay. Fish elevators periodically empty entrapped organisms into a four-foot diameter conduit that transports fish to a submerged discharge point approximately 1,900 feet offshore. Organisms impinged on the traveling screens are removed during periodic rotations and cleanings for disposal at a landfill.

c. *page E-4 (last paragraph), Section I.B (Facility Description – Discharge Points and Receiving Waters) of Fact Sheet*

UNITS 2 AND 3

~~Once-though cooling water and other waste streams are discharged from SONGS Unit 2 to the Pacific Ocean through 63 underwater diffusers ranging from 5,888 ft. to 8,350 ft. offshore and ranges in depth from 39 ft. to 49 ft. The offshore end of the diffuser system for the Unit 2 combined outfall (Outfall 002) is located at latitude 33º 21' 00" north and longitude 117º 34' 14" west.~~

~~Once-though cooling water and other waste streams are discharged from SONGS Unit 3 to the Pacific Ocean through an underwater diffuser that is 2,500 feet long and ends 5,900 feet offshore at a depth of approximately 39 feet. The offshore end of the diffuser system for the Unit 3 combined outfall (Outfall 003) is located at latitude 33º 20' 55.84" north and longitude 117º 34' 13.5" west.~~

Once-though cooling water and other waste streams are discharged from SONGS Unit 2 to the Pacific Ocean through Outfall 002. Outfall 002 is equipped with a 2,462 feet long diffuser pipe that starts at 5,888 feet offshore and extends to 8,350 feet offshore. The Unit 2 diffuser pipe ranges in depth from 39 feet to 49 feet. The offshore end of the Unit 2 diffuser pipe is located at latitude 33º 21' 00" north and longitude 117º 34' 14" west. The diffuser was designed by the California Institute of Technology in 1974. The diffuser is equipped with 63 jet nozzles. The nozzles are alternated in the direction of 25 degrees upcoast and 25 degrees downcoast along the diffuser pipe. Further, the nozzles are directed at an angle of 20 degrees off of the bottom and the nozzle openings are only two feet off the seafloor. The initial offshore momentum of the effluent from the jet nozzles coupled with buoyant momentum of the heated plume (as it travels to the surface) dramatically promotes the mixing of the effluent with the receiving seawater.

Once-though cooling water and other waste streams are discharged from SONGS Unit 3 to the Pacific Ocean through Outfall 003. Outfall 003 is equipped with a 2,500 feet long diffuser pipe that starts at 3,400 feet offshore and extends to 5,900 feet offshore (at a depth of approximately 39 feet). The offshore end of the Unit 3 diffuser pipe is located at latitude 33º 21' 00" north and longitude 117º 34' 14" west. The Unit 3 diffuser was also designed by the California Institute of Technology in 1974 and like the Unit 2 diffuser is equipped with 63 jet nozzles. The design, operation, and function of the jet nozzles in the Unit 3 diffuser are identical to the Unit 2 diffuser.

The Unit 3 diffuser is located closest to the Unit 2 and 3 intakes. The nearest shoreward discharge jet nozzle of the Unit 3 diffuser is located approximately 990 feet and 330 feet from the Unit 2 and 3 intakes respectively (in the lateral direction). The nearest Unit 2 diffuser jet nozzle is located a very large distance (approximately 2,700 feet) away from either of the two intakes (in the longitudinal direction). The design of the Unit 2 and 3 diffusers ensures that heated effluent actively travels away from the diffusers and shoreline in a longitudinal direction. This also ensures that the discharge from the diffusers does not move in the lateral

direction and get entrained in the Unit 2 and 3 intake structures. A schematic showing the diffuser design can be found in Attachment H-1 to the tentative Orders.

d. *page E-5 (Wastewater Discharge Table for Units 2 and 3), Section I.B (Facility Description – Discharge Points and Receiving Waters) of Fact Sheet*

Outfall Numbers Associated with Unit 2	Outfall Numbers Associated with Unit 3	Wastewater Discharge	Maximum Flow (mgd)
002*	003*	Once Through Condenser Cooling	1,219.0
002*	003*	Saltwater Cooling (serving Component Cooling Water System and Turbine Plant Cooling Water System)	~~27.0~~ 49.0
002*	003*	Pump Bearing Flush	0.17
~~002*~~	~~003*~~	~~Turbine Plant Cooling~~	~~22.0~~
002*	003*	Yard Drains	0.17
002*	003*	Screen Wash	7.2
002-A**	003-A**	Chemical Metal Cleaning Wastes (Steam Generator)	0.2
002-B**	003-B**	Non-Chemical Metal Cleaning Wastes (Steam Generator and Feedwater Piping Sludge Lancing)	0.040
002-C**	003-C**	Blowdown Processing	0.085
002-D**	003-D**	Make-up Demineralizer	0.670
002-E**	003-E**	Radwaste System	0.432
002-F**	003-F**	Polishing Demineralizer System	1.4
002-G**	003-G**	Steam Generator Blowdown	0.720
002-H**	003-H**	Hotwell Overboard	7.20
002-I**	003-I**	Plant Drains (Building Sump)	0.8
002-J**	002-J**	Intake Structure Sump	0.288
~~002-K**~~	~~003-K**~~	~~Thermophilic Digester~~	~~0.010~~
002-~~L~~K**	003-~~L~~K**	Concrete Cutting Water	0.2
		Total Discharge	1,287 mgd

*wastestreams associated with the components of the condenser cooling water system and seawater cooling.
**In-plant wastestreams are routed to the condenser cooling water system prior to discharge to the ocean outfall

e. *page E-6 (5th paragraph), Section I.B (Facility Description – Discharge Points and Receiving Waters) of Fact Sheet*

Saltwater Cooling (Outfalls 002 and 003). The salt water cooling system for each of the two Units uses ~~27~~ 49 mgd of once through ocean water to remove heat from a closed loop component cooling water system (CCWS) that serves various auxiliary reactor systems and from the turbine plant cooling water (TPCW) system. The salt water cooling water is withdrawn from and returned to the main condenser cooling water system. It is chlorinated or brominated to control microbiological fouling and is discharged through Outfall 005 (across-the-beach) during periods of intake and discharge structure maintenance or emergencies.

f. *page E-7 (2nd paragraph), Section I.B (Facility Description – Discharge Points and Receiving Waters) of Fact Sheet*

~~Turbine Plant Cooling (Outfalls 002 and 003). In its permit renewal application, the Discharger reports a maximum discharge of 22 mgd from the turbine plant cooling systems serving each of the two Units.~~

g. *page E-8 (2nd paragraph), Section I.B (Facility Description – Discharge Points and Receiving Waters) of Fact Sheet*

Steam Generator Blowdown (Outfalls 002-G and 003-G). The steam generator provides steam to the turbine by utilizing heat from the Reactor Coolant System. Various chemicals added to the system to maintain proper water chemistry and prevent corrosion at different stages may include: hydrazine, ethalanomine, ammonia, titanium dioxide, boric acid, ~~dimythalamine~~ diethanolamine, carbohydrazide, and morphaline. The steam generators are "blown down" periodically to maintain a proper chemical balance. The maximum discharge flowrate from this system is 0.720 mgd.

h. *page E-8 (4th paragraph), Section I.B (Facility Description – Discharge Points and Receiving Waters) of Fact Sheet*

Plant Drains (Outfalls 002-I and 003-I). "Non-radioactive" plant drains flow, or are pumped, to building sumps, which are pumped to the SONGS Units 2 and 3 common oil removal system. The maximum discharge flowrate from this system is 0.80 mgd. The "Non-radioactive" plant drains refer to drains from systems that do not normally contain radioactivity, but on occasion may contain trace amounts. Non-radioactive plant drains are routed through a radiation monitor. Radioactive plant drains are routed to the radwaste processing system where the water is purified and radioactivity removed through filters and ion exchangers. The purified water is sampled and analyzed for radioactivity prior to release through an additional radiation monitor. All radioactivity sampling, reporting, and regulatory oversight fall under the jurisdiction of the Nuclear Regulatory Commission in accordance with the federal Atomic Energy Act.

i. *page E-8 (6th and 7th paragraphs), Section I.B (Facility Description – Discharge Points and Receiving Waters) of Fact Sheet*

~~Thermophilic Digester (Outfalls 002-K and 003-K). SCE has proposed to install and operate a thermophilic digester to treat kelp debris, dead fish, sewage sludge, and kitchen grease in order to reduce the solid waste disposal needs for the facility. The maximum flowrate from this system, if constructed, would be 0.010 mgd.~~

Concrete Cutting Cooling Water (Outfalls 002-~~L~~K and 003-~~L~~K). Concrete cutting may be needed to support future activities at the facility. If needed, concrete cutting is estimated to produce a maximum discharge flowrate of 0.200 mgd.

j. *page E-9 (Waste Discharge Table for Unit 1), Section I.B (Facility Description – Discharge Points and Receiving Waters) of Fact Sheet*

Wastewater Discharge	Maximum Flow (mgd)
Main Circulating Water	35.00
Unit 1 Sewage Effluent	0.10
Mesa Complex Sewage Effluent	0.045
Metal Cleaning Waste (Chemical and Non-chemical)*	0.08
Radwaste System*	0.144
~~Plant Drains*~~	~~0.014~~
Yard Drains*	0.360
Dewatering*	0.864
Total Discharge	36.6 mgd

*In-plant wastestreams

k. *page E-10 (4th paragraph), Section I.B (Facility Description – Discharge Points and Receiving Waters) of Fact Sheet*

~~Plant Drains and~~ Yard Drains. All ~~plant and~~ yard drains gravity feed to various sumps located on the facility grounds and are subsequently routed to Outfall 001 without treatment. ~~Sumps are pumped to the Unit 1 oily waste separator prior to discharge~~. Discharger reported an average flow of approximately ~~0.01 mgd from the plant drains and~~ 0.36 mgd from the yard drains. The plant drain wastestream and associated oily waste separator, previously regulated at Unit 1, have been permanently removed from service.

l. *Add following to page E-23 (end of 1st paragraph), Section II.B (Other Applicable Water Quality Plans, Policies and Regulations - California Ocean Plan) of Fact Sheet:*

Caltech designed Outfalls 002 and 003 to have an initial dilution of at least 8:1 (*Hydraulic Modeling of Thermal Outfall Diffusers for the San Onofre Nuclear Power Plant, California Institute of Technology Report No. KH-R-30, January, 1974*). The Caltech laboratory verification modeling of the design demonstrated that the initial

dilution of the outfalls, coupled with an analysis of field data on ocean currents, temperatures, and heat transfer really lead to an initial dilution of 10.5:1.
The Marine Review Committee (MRC) performed an independent study of the design and operation of SONGS Units 2 and 3 cooling systems as part of its larger study (required by the California Coastal Commission) spanning 1975 - 1989. The MRC verified the Caltech design and modeling studies by performing actual operational plume field tests using dye, current meters, and various field temperature studies. This independent analysis confirmed that the jet nozzles of the diffusers enable an initial dilution of at least 10:1. The MRC study indicated that the entire body of water from the diffuser jet nozzles is initially pushed towards the surface and offshore and there is minimal entrainment of water in the nozzles.

The Caltech and MRC studies demonstrated that the Zone of Initial Dilution (ZID) for each of the Unit 2 and 3 diffuser does not overlap with the other. In fact, the high dilution efficiency of the diffuser jet nozzles enables the initial dilution of effluent to be achieved within about 60 feet to either side of each diffuser. Therefore, there is no basis for a combined ZID or for additive effects from the discharges of Units 2 and 3.

As indicated earlier, the nearest shoreward discharge jet nozzle of the Unit 3 diffuser is located approximately 990 feet and 330 feet from the Unit 2 and 3 intakes respectively (in the lateral direction). This greatly exceed the 60 feet lateral distance in which initial dilution of effluent from the Unit 3 diffuser is achieved. Furthermore, the high dilution efficiency and design of the diffuser jet nozzles ensures that the discharge from the diffuser does not get entrained in the Unit 2 or 3 intakes.

The nearest Unit 2 diffuser jet nozzle is located a very large distance (approximately 2,700 feet) away from either of the two intakes (in the longitudinal direction). This significantly reduces the likelihood that warm water from the Unit 2 diffuser would be routed back to the intake conduits.

m. *Add following to page E-24 (end of 4th paragraph), Section II.B (Other Applicable Water Quality Plans, Policies and Regulations -Thermal Plan) of Fact Sheet:*

The Thermal Plan exception granted by the State Board to SCE (Pursuant to Resolution No. 9-028) to increase its Delta T limitation from 20 degrees F to 25 degrees F was based on extensive studies conducted by SCE's contractor FlowScience in 1994. The report submitted by FlowScience (*FlowScience, Inc., Evaluation of SONGS Units 2 and 3 Ocean Cooling Water System Maximum Temperature Increment. FSI 931EJL. August 10, 1994*), as part of SCE's Thermal Plan exception application, showed that the 25 degrees F Delta T limitation in conjunction with the Unit 2 and 3 diffuser systems would enable SONGS to continue to comply with all provisions and objectives of the Thermal Plan. This includes the objective that the Units not cause an increase in the natural water temperature exceeding 4 degrees F at the shoreline, the surface of any ocean substrate, or the ocean surface beyond 1,000 feet from the discharge.

Modeling studies conducted by FlowScience indicated that the increase in natural

temperatures due to the Unit 2 and 3 discharge at the shoreline, surface, and 1,000 ft (and beyond) would be much less than the 4 degrees F objective specified by the Thermal Plan even under worst-case scenario conditions (i.e. an effluent Delta-T of 25 degree F and no current in the receiving waters).

A graphical representation showing effectiveness of the Unit 2 and 3 diffusers in complying with receiving water temperature objectives of the Thermal Plan (at Delta T values of 20 and 25 degrees F) can be found in Attachment H-2 to the tentative Orders.

n. *Add following to page E-29 (end of 1st paragraph), Section II.B (Other Applicable Water Quality Plans, Policies and Regulations - Clean Water Act Section 316(b)) of Fact Sheet:*

Historical CWA Section 316(b) and Related Studies Conducted at SONGS

Marine Review Committee(MRC) Studies:

Under the mandate of California Coastal Commission's (CCC) permit for SONGS (No. 6-81-330-A) a Marine Review Committee (MRC) was established in 1974 to carry out a comprehensive study on the effects of Units 2 and 3 on the marine environment in the vicinity of SONGS and to determine compliance with State and Federal water quality regulations. The MRC was comprised of three scientists, one appointed by SCE, one appointed by a coalition of environmental organizations, and one appointed by CCC. The MRC conducted its studies for a period of 15 years from 1974 to 1989. The MRC provided a final report on the studies to the CCC in 1989. The report (*Final Report of the Marine Review Committee to the California Coastal Commission, August 1989, MRC Document No. 89-02*) included a list of significant findings as summarized below:

Findings:

1. The giant kelp, kelp-bed fish, and large invertebrates living on the cobble bottom of the San Onofre Kelp (SOK) bed were impacted adversely by the turbid discharger from SONGS. In particular, high density kelp in SOK was reduced by about 200 acres or 60 percent below the abundance that would have occurred in the absence of SONGS.
2. There was an observed reduction in local midwater fish populations (eg. local adult queenfish populations were reduced between 30 to 70 percent) but local benthic fish populations increased above the levels that would have occurred in the absence of SONGS. Populations of soft benthos and mysids did not appear to be adversely impacted by the SONGS discharge. Also the abundance of plankton near SONGS was largely unaffected by the SONGS operations, because the diffusers at Units 2 and 3 enable the discharge plume to mix very rapidly with ambient waters.
3. Although several billion fish larvae are entrained and killed in the SONGS cooling water system, there did not appear to be a clear decrease in the abundance of fish larvae near SONGS. Overall, more species increased than decreased. An exception, is the northern anchovy larvae, which showed a decrease of about 30

percent, although anchovy eggs increased by 100 percent. The vast majority of this very abundant species are offshore, and local depression in the SONGS' area has negligible consequences for the populations in the Southern California Bight.

Mitigation Requirements:

Based on its study findings, the MRC recommended a series of mitigation measures at SONGS that would offset the localized losses of larval and adult populations of fish due to the SONGS intake structures and cooling water system and the adverse impacts. The MRC also recommended mitigation measures that would offset the adverse impacts of the SONGS discharge on the SOK. The MRC's mitigation recommendations were incorporated into CCC's amended permit (No. 6-81-330-A) to SONGS in 1991. The mitigation conditions are listed below:

1. SCE was required to create or substantially restore at least 150 acres of southern California wetlands. The CCC subsequently required SCE to enhance wetland habitat at San Dieguito Lagoon. Restoration work at this site is ongoing.
2. SCE was required to install fish barrier devices at the power plant to augment the intake velocity cap and fish return systems.
3. SCE was required to construct a 300-acre kelp reef. In 1997, the CCC decided to modify this requirement by requiring SCE to construct an artificial reef large enough to sustain 150 acres of medium to high density kelp bed community in conjunction with funding for a mariculture/marine fish hatchery. The construction of the artificial reef is currently in the experimental phase.
4. The above projects would be fully funded by SCE. The funds provided would enable the CCC to contract staff for technical oversight and independent monitoring of the mitigation projects.

Review of SONGS Historical Compliance with Section 316(b) Requirements by the U.S. EPA:

In June 1994, the U.S. EPA released a report titled *Review of Southern California Edison, San Onofre Nuclear Generating Station (SONGS) 316(b) Demonstration.* The report was prepared for the U.S. EPA by its contractor SAIC. The report reviewed the status of compliance of SONGS Units 2 and 3 with applicable Section 316(b) requirements in 1994. Since the Phase II rule for Section 316(b) was not yet promulgated in 1994, the U.S. EPA assessed SONGS' compliance with Section 316(b) based on Best Professional Judgement (BPJ).

In its report, the U.S. EPA indicated acknowledged that the receiving waters in the vicinity of SONGS contain viable, self-sustaining populations or communities of organisms and the plant incorporates appropriate intake water technologies for the purposes of minimizing adverse environmental impacts (relevant to 316(b) considerations). The intake water technologies at SONGS include the use of velocity caps on the submerged intake structures (to reduce entrainment of motile fishes through the conduit to the on-shore screen wells) and the employment of a fish return system (to reduce adult fish impingement losses on the intake screens). In its report, the U.S EPA indicated that the Units 2 and 3 appeared to comply with the requirements of Section

316(b) prevailing in 1994.

The U.S. EPA indicated that although SONGS appeared to comply with Section 316(b) requirements, the operations at SONGS were causing some adverse environmental impacts (outside the context of Section 316(b), as identified by the Marine Review Committee. Consequently, the U.S. EPA recommended that SONGS continue to implement the mitigation measures recommended by the Marine Review Committee and incorporated in the permit issued to SONGS by the California Coastal Commission. The U.S. EPA also recommended that the Fish Return System at SONGS continue to be monitored (for weight and number of fish impinged) during heat treatments and for at least one continuous 24-hour period per week during normal operations of Units 2 and 3. This requirement has been incorporated in all NPDES permits since 1994 (including tentative Order Nos. R9-2005-0005 and R9-2005-0006).

Based on the U.S. EPA's findings, it would not be feasible to require the power plant to make additional significant upgrades to its intake structures prior to the submittal of the *Comprehensive Demonstration Study (Study)*, required pursuant to the Phase II rule. The *Study*, which is due by January 9, 2008, will include implementation schedules for technological upgrades and/or restoration measures that would enable the facility to come into compliance with the rule. Therefore in the interim, it is appropriate for SONGS to continue operating in its current configuration.

Fish Return System Description and Efficiency Studies

The Fish Return System (FRS) at SONGS relies on the behavioral responses of fish to varying water velocities and pressures. Fish within the cooling water encounter concrete vanes and angled plastic louvers situated in front of the traveling screens. These are angled toward a bypass area and create a pressure differential detected by the fish, which swim along the louvers. The bypass area, a quiet-water concrete lined basin, measures 16 feet x 13 feet. A watertight elevator basket, open at the top, sits within the basin. When manually activated, the elevator ascends, collecting most of the fish in the basin. Upon reaching its maximum height, the elevator tips, spilling the fish into a sluice channel. This procedure is repeated several times until most fish are removed. Simultaneously, additional water flushes into the channel and the fish are discharged into a 4-foot diameter conduit which empties in approximately 20 feet deep water, about 1,900 feet offshore. The fish return conduit is common to both Units 2 and 3.

Studies on the efficiency of the Fish Return System (FRS) at SONGS were conducted during 1984-85 by the National Marine Fisheries Service (NMFS). The NMFS subsequently released a report on its findings in 1989. The report was titled *Analysis of Fish Diversion Efficiency and Survivorship in the Fish Return System at the San Onofre Nuclear Generating Station (NOAA Technical Report NMFS 76, April 1989)*. The report examined the efficiency of fish diversion within the FRS and also discussed the survivorship of the diverted fish.

A "corral" net was deployed at the end of the FRS outfall and monitored by divers to document the survival of fish returned to the ocean. A total of fourteen 96-hour samples were collected (six from Unit 2 and eight from Unit 3).

The report submitted by NMFS included the following significant findings regarding the FRS:

1. Most species of fish entrapped by the Units 2 and 3 intakes were diverted efficiently by the FRS. This was particularly true of such species as kelp bass, salema, yellowfin croaker, northern anchovy, and queen fish. In 1984, 13 of the 15 most abundant species were diverted with 80 percent efficiency, 10 species exceeding 90 percent.
2. With most species, larger individuals were diverted with highest frequency. The northern anchovy appear to be an exception to this rule. However, it is possible that the escape of small anchovies through the traveling screens may be responsible of this exception.
3. Occasionally small fish were eaten by predators as they exited the FRS. Infrequent visits of schooling predators such as jack mackerel appeared to result in highest predation pressure. Schools of these predators (as well as those of California barracuda) were observed during 13 of 80 days of observations at the FRS' discharge.
4. Although post-return survivorship studies in large holding cages at sea were difficult to carry out, the diverted fish generally survived 96 hours in holding cages after diversion. Thus, most fish survived their transit from the FRS.

o. *page E-32, Section III.A.2.b (Applicable Technology-Based Effluent Limitations) of Fact Sheet*

b. Low volume wastes are defined as those wastewater sources for which specific limitations are not established by the Effluent Limitations Guidelines at 40 CFR 423. The quantity of pollutants discharged from low volume waste sources times the concentration listed in the following table. [40 CFR 423.12 (b) (3)]:

Pollutant	**Daily Max (mg/L)**	**30 Day Avg (mg/L)**
Total Suspended Solids	100	30
Oil and Grease	20	~~25~~ 15

p. *page E-32, Section III.A.2.c (Applicable Technology-Based Effluent Limitations) of Fact Sheet*

c. The quantity of pollutants discharge in metal cleaning wastes shall not exceed the quantity determined by multiplying the flow of metal cleaning wastes times the concentration listed in the following table. [40 CFR 423.12 (b) (5)] :

Pollutant	**Daily Max (mg/L)**	**30 Day Avg (mg/L)**
Total Suspended Solids	100	30

Oil and Grease	20	~~25~~ 15

q. *page E-39 (5th paragraph), Section III.B.2.a (Applicable Beneficial Uses and Water Quality Criteria and Objectives – Ocean Plan) of Fact Sheet*

The maximum combined low-volume discharges from Units 2 or 3 are 11.8 mgd in volume and include the following individual wastestreams (pursuant to 40 CFR 423, *Effluent Limitations Guidelines for the Steam Electric Power Generating Point Source Category*, treated domestic wastewater or metal cleaning wastes are not categorized as low-volume wastewaters):

- Blowdown Processing
- Makeup Demineralizer System
- Radwaste System
- Polishing Demineralizer System
- Steam Generator Blowdown
- Hotwell Overboard
- Plant Drains (Building Sump)
- Intake Structure Sump
- ~~Thermophilic Digester~~
- Concrete Cutting Cooling Water

The maximum combined low-volume discharges from Unit 1 are 1.38 mgd in volume and include the following individual wastestreams:

- Radwaste System
- ~~Plant Drains/~~Yard Drains
- Dewatering Discharges

r. *page E-42 (2nd paragraph), Section IV.A (Influent Monitoring - Fish Impingement) of Fact Sheet*

~~In 2003, a total of 60 species of fish were counted at the Unit 2 intake structure. When fish count and weight is extrapolated to account for total influent flow, the estimated fish impingement in 2003 was 2,569,039 individuals weighing 16,279 kilograms. The top 15 species accounted for 99.9 percent of the total number and 99.5 percent of the total weight. Northern anchovies were the most numerous species contributing 88 percent of the total number of fish and 60.8 percent of the total weight. Queenfish were the second most abundant species with 7.5 percent of the number and 17.9 percent of the total biomass.~~

In 2003, a total of 62 species of fish were counted at the Unit 2 intake structure. When fish count and weight is extrapolated to account for total influent flow, the estimated fish impingement in 2003 was 995,398 individuals weighing 5,644 kilograms. The top 15

species accounted for 99.7 percent of the total number and 98.3 percent of the total weight. Northern anchovies were the most numerous species contributing 88.8 percent of the total number of fish and 61 percent of the total weight. Queenfish were the second most abundant species with 8.2 percent of the number and 19.3 percent of the total biomass. In 2003, a total of 60 species of fish were counted at the Unit 3 intake structure. When fish count and weight is extrapolated to account for total influent flow, the estimated fish impingement in 2003 was 2,569,039 individuals weighing 16,279 kilograms. The top 15 species accounted for 99.9 percent of the total number and 99.5 percent of the total weight. Northern anchovies were the most numerous species contributing 88.8 percent of the total number of fish and 60.8 percent of the total weight. Queenfish were the second most abundant species with 7.5 percent of the number and 17.9 percent of the total biomass.

9. <u>ADD ATTACHMENT H TO TENTATIVE ORDER</u> (Applicable to both tentative Order Nos. R9-2005-0005 and R9-2005-0006)

1. Schematic of SONGS Diffuser System and Intake Velocity Cap.
2. Graphical Representation Showing Effectiveness of Unit 2 and 3 Thermal Diffusers in Complying with Receiving Water Temperature Objectives of the Thermal Plan (at Delta T values of 20 and 25 degrees F).